Chapter 7

Vegetation and Wetland Resources

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INTRODUCTION

The study area for Alternatives 4 through 8 includes portions of the Sacramento/San Joaquin Valley similar to the project areas considered in the 1997 DEIR/EIS. The study area comprises a mixture of developed urban, agricultural, and undeveloped rural lands, most of which have modified by previous water development and other large-scale land use practices. Nonetheless, the study area includes a diversity of plant communities and wetland types. The 1997 DEIR/EIS provides a detailed discussion of vegetation and wetland types found in the area; additional information on plant communities that were not affected by the alternatives considered in the 1997 DEIR/EIS is provided below.

With respect to vegetation and wetland resources, Alternative 4, "EBMUD-Only Lower American River Delivery," and Alternative 5, "Sacramento River Delivery," in this REIR/SEIS are very similar to Alternative 3, "Joint Water Supply," in the 1997 DEIR/EIS. The 1997 DEIR/EIS includes a full discussion of the environmental setting and potential impacts of these alternatives. Alternative 6, "Freeport East Delivery," Alternative 7, "Freeport South Delivery," and Alternative 8, "Bixler Delivery," include facilities in locations that were not described in the 1997 DEIR/EIS. Additional information on these alternatives is provided in the "Affected Environment" section below.

AFFECTED ENVIRONMENT

Study Methods

Vegetation and wetland resources for the alternative alignments were initially evaluated by reviewing existing information on biotic resources in the project area, including the 1997 DEIR/EIS, the CDFG Natural Diversity Database (CNDDB, August 2000), recent aerial photographs, and USGS topographic maps (7.5' quadrangles) encompassing the proposed project sites. Reconnaissance surveys of the proposed facilities and alignments were performed on August 16 and 22, 2000. These surveys consisted mostly of visual observations from public roads and other accessible areas. For each alternative, the footprint of the proposed facilities and a 200-foot-wide corridor along the route of each pipeline alignment were evaluated for plant communities, wetland resources, and the potential occurrence of sensitive plant species.

For those portions of the study area that could not be accessed or observed directly from public roads, information on vegetation and wetland resources was obtained by analyzing existing information and aerial photographs of these areas and referring to equivalent habitats in adjacent areas that could be directly observed.

Plant Communities and Habitat Types

The 1997 DEIR/EIS identified 15 types of plant communities and associated habitat types in the study area, all of which are represented in the study area for Alternatives 4 through 8. The 1997 DEIR/EIS grouped these vegetation types into "common plant communities," which included developed areas, agricultural lands, annual grassland, and eucalyptus stand; "sensitive plant communities," which included blue oak woodland, live oak woodland, valley oak woodland, blackberry/rose riparian scrub, willow riparian scrub, and riparian woodland; and "wetland plant communities," which included freshwater marsh, vernal pool, vernal swale, seasonal wetland, and open water (creeks, rivers, and ponds). Characteristics of these plant communities are described in Table 7-2 of the 1997 DEIR/EIS.

In addition to the communities listed above, two wetland plant communities, brackish marsh and salt marsh, are found in the vicinity of Alignment 8 near Bixler. Brackish marsh habitats occur in interior estuarine areas with low to moderate salinity where fresh water mixes

with brackish tidal or salt water. The dominant vegetation consists of a mixture of emergent species such as cattail, bulrush, and sedges, which are also characteristic of freshwater marshes, as well as some species characteristic of salt marshes. Salt marshes occur in higher salinity estuarine areas and are dominated by salt-tolerant plants such as salt grass and pickleweed. Brackish marsh is present in the vicinity of Indian Slough, and salt marsh habitat occurs in the vicinity of the proposed brine disposal pipeline for Alternative 8.

Special-Status Plant Species

Special-status plant species include species listed, proposed, or candidates for listing under the Federal Endangered Species Act; those designated as "species of concern" by the USFWS; species listed or proposed for listing under the California Endangered Species Act; species protected by local regulations; and species considered sufficiently rare by the scientific community (e.g., California Native Plant Society [CNPS] list 1B species) to qualify for consideration under CEQA.

The 1997 DEIR/EIS identified 19 special-status plant species that could potentially occur in the study area. In addition to these species, 11 special-status plant species were identified as potentially occurring in the project area for Alternatives 4 through 8. These species are summarized in Table 7-1.

No special-status plants were observed in the project area during reconnaissance surveys conducted on August 16 and 22, 2000.

In general, potential habitat for sensitive plants does exist in the study area, particularly near Bixler, where salt marsh and brackish marsh habitat may support sensitive plant species. In addition, while not considered sensitive habitat types, roadside ditches, agricultural drainage channels, irrigation canals, riparian scrub, and seasonal pools can also support special-status plant species.

Wetlands

Wetlands are one type of Waters of the United States, which are areas subject to regulation under Section 404 of the Clean Water Act. Waters of the United States include navigable waterways, lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds. Wetlands are subject to regulation by the Corps and U.S. Environmental Protection Agency (EPA), pursuant to Section 404 of the Clean Water Act. Wetlands are defined for regulatory purposes as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated conditions (33 CFR 328.3, 40 CFR 230.3).

Wetlands and other waters in the study area that are potentially subject to Corps jurisdiction include vernal pools and swales, freshwater marshes, natural ponds, and areas within the channel and banks of the Sacramento River, Mokelumne River, Cosumnes River, and several smaller creeks and sloughs. The extent of these areas potentially subject to Corps jurisdiction was not determined in the current study, and a wetland delineation verified by the Corps would be required prior to project activities that would affect these areas.

ENVIRONMENTAL CONSEQUENCES

Significance Criteria

The significance criteria outlined in Chapter 7 of the 1997 DEIR/EIS were also applied in the evaluation of Alternatives 4 through 8. These criteria are consistent with the State CEQA Guidelines and also with federal, state, and local laws, regulations, and policies pertaining to vegetation and wetland resources in the project area.

These criteria indicate that an alternative would generally have a significant impact on

Table 7-1: Additional Special-Status Plant Species Known or with Potential to Occur in the Alternatives 4 through 8 Project Areas

Species	Status* Federal/State/CNPS	Plant Description	Habitat Associations	Identification Period	Potential to Occur in the Study Area
Suisun Marsh Aster *Aster lentus*	SC/--/1B	Perennial aster with violet flowers in an open cyme. Leaves are basal and cauline, generally glabrous. Note: this species grades into *A. chilensis.*	Marshes and swamps (brackish and freshwater). Endemic to the Delta. Most often seen along sloughs with Phragmites, Scirpus, blackberry, Typha, etc.	June-October	Medium
Alkali Milk Vetch *Astragalus tener var. tener*	--/--/1B	This delicate annual has dense inflorescences with pinkish-purple flowers. Plants must be in fruit to identify to the variety tener.	Found within the great valley and Delta region. On alkali playa, valley and foothill grassland, and vernal pools. Flooded areas.	March-June	Low
Big Tarplant *Blepharizonia plumosa ssp. Plumosa*	--/--/1B	Annual gray-green plant known as the big tarweed, as inflorescences are glandular with flower heads in a narrow to open panicle. Found below 400 meters elevation.	Grows in dry hills and plains in annual grassland. Clay to clay-loam soils, usually on slopes and often in burned areas.	July-October	Low
Diamond-petaled California poppy *Eschscholzia rhombipetala*	SC/--/1B	This annual can grow to 30 cm tall. It is called 'diamond petals' for its barrel-shaped receptacles in the dainty yellow flower heads that look like diamonds. The exudate is clear in all *Eschscholzia sp.*	Fallow fields, open places.	March-June	Very Low
Northern California Black Walnut *Juglans hindsii*	--/--/1B	This species, a low tree with several trunks, is characteristically aromatic, deciduous, and monoecious.	Grows in riparian forests and woodlands. It is now widely naturalized, but some native stands still exist along the Sacramento River.	April-May	Low
Delta Tule Pea *Lathyrus jepsonii var. jepsonii*	SC/--/1B	Glabrous perennial, often robust with showy typical pea family pink to purple flowers. Flowers and fruit should be present for proper identification.	Freshwater and brackish marshes. Mostly restricted to the Delta. Often found with Typha, *Aster lentus*, *Rosa californica*, Scirpus. Usually on marsh and slough edges.	May-June	High
Mason's lilaeopsis *Lilaeopsis masonii*	SC/R/1B	This perennial is in the carrot family. These creeping plants have cylindrical, thread-like leaves and short petioled flowers that are white to maroon.	Freshwater and brackish marshes, riparian scrub. Usually in silt or mud soil in sloughs. Particularly sensitive in tidally influenced marsh.	June-August	High
Delta Mudwort *Limosella subulata*	---/---/2	Tufted, stoloniferous, tiny, rare annual herb literally meaning 'seat in the mud', these plants have tiny white to lavender flowers.	Muddy or sandy intertidal flats in riparian scrub, freshwater marsh, and brackish marsh. Often with *Lilaeopsis masonii*. Native to the east coast of N. America.	May-August	Low

Table 7-1, Continued. Additional Special-Status Plant Species Known or with Potential to Occur in the Alternatives 4 through 8 Project Areas

Species	Status* Federal/State/CNPS	Plant Description	Habitat Associations	Identification Period	Potential to Occur in the Study Area
Antioch Dunes evening-primrose *Oenothera deltoides ssp. Howellii*	E/E/1B	Small perennial primrose with white-fading pink flowers. Plants are grayish green and this ssp. has characteristic free sepal tips in bud.	Sandy bluffs and dunes, growing in populations with few to +/-150 plants. Known only from Antioch Dunes area.	June-September	Very Low
Blue skullcap *Scutellaria lateriflora*	---/---/ 2	This blue perennial is differentiated from the Marsh skullcap. The lower lip of the flower is blue, unlike the Marsh skullcap, which has white-mottling on the lower lip of the petals.	Marshes and wet meadows, seeps.	May-July	Low
Caper-fruited tropidocarpum *Tropidocarpum capparideum*	SC/---/1A	Slender, branched, erect annual with characteristic keeled fruits. Flowers are yellowish, sometimes tinged purple.	Alkaline soils, low hills, and valleys.	March-April	Very Low

* Status explanations:

Federal

-- = No listing.
E = Listed as endangered under the federal Endangered Species Act.
T = Listed as threatened under the federal Endangered Species Act.
SC = Species of concern; species for which existing information indicates it may warrant listing but for which substantial biological information to support a proposed rule is lacking (formerly C2 species).

State

-- = No listing.
E = Listed as endangered under the California Endangered Species Act.
R = Listed as rare under the California Native Plant Protection Act. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.

California Native Plant Society

1A = List 1A species: plants presumed extinct in California.
1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.

vegetation resources if it would result in losses of or effects on rare, threatened, or endangered species or substantially diminish habitat quality for such species.

Less Than Significant Impacts

Alternatives 4 Through 8

Impact: Temporary Disturbance to or Permanent Loss of Developed Areas, Non-Native Annual Grassland, and Agricultural Fields and Associated Plant Communities. Developed areas and agricultural fields are common in the project area and consist mostly of non-native, degraded plant communities that support few native or special-status plant species. Developed cultivars and common field and orchard crops in the area include walnuts, vineyards, corn, and alfalfa. Annual grassland and roadside ditches support various noxious weeds, including star thistle, and invasive grasses such as ripcut and Italian rye grass. Therefore, impacts on these communities are not considered significant. No mitigation is required.

Significant Impacts and Mitigation

The physical facilities associated with Alternatives 4 and 5 are similar to those described for Alternative 3, "Joint Water Supply," in the 1997 DEIR/EIS. Therefore, the effects on vegetation resources would be similar. The impacts of Alternatives 6, 7, and 8 would also be very similar to those described in the 1997 DEIR/EIS. Therefore, the description of impacts focuses on those effects that would be somewhat different from those described in the 1997 DEIR/EIS. Applicable mitigation measures described in the 1997 DEIR/EIS are also summarized.

Alternative 4: EBMUD-Only Lower American River Delivery
Alternative 5: Sacramento River Delivery
Alternative 6: Freeport East Delivery

Impact: Temporary Disturbance to or Potential Loss of Sensitive Vegetation and Wetland Resources Near Active Construction Areas. Implementation of these alternatives could result in impacts on sensitive communities during construction. This impact is significant. Implementation of the following mitigation measures, fully described in the 1997 DEIR/EIS, would reduce this impact to a less-than-significant level.

Mitigation Measure 7-1a: Confine Construction Activities and Equipment to the Designated Construction Work Area.

Mitigation Measure 7-1b: Avoid and Protect Sensitive Vegetation and Wetland Resources Near Designated Construction Work Areas.

Mitigation Measure 7-1c: Reestablish Preconstruction Site Conditions to Allow Natural Colonization of Plant Species and Reseed if Necessary.

Impact: Degradation of Oak Woodlands and Loss of Individually Protected Trees. Construction of the FSC to Mokelumne Aqueducts pipeline could fragment blue oak and valley oak woodland habitats, remove individual trees, and degrade overall woodland habitat quality. This impact is significant. Implementation of the following mitigation measures, fully described in the 1997 DEIR/EIS, would reduce this impact to a less-than-significant level.

Mitigation Measure 7-2a: Identify and Avoid Oak Woodland and Individual Locally Protected Trees.

Mitigation Measure 7-2b: Obtain and Comply with County Tree Removal Permits and Implement Conditions of Permits.

Impact: Loss of or Disturbance to Riparian Communities. The pipeline alignments cross several waterways that support riparian communities. This impact is significant. Implementation of the following mitigation measures, fully described in the 1997 DEIR/EIS, would reduce this impact to a less-than-significant level.

Mitigation Measure 7-3a: Establish a Protection Buffer around Woody Riparian Communities.

Mitigation Measure 7-3b: Compensate for Unavoidable Riparian Woodland Losses.

Impact: Loss of or Disturbance to Jurisdictional Waters of the United States, Including Wetlands. Construction of the pipeline alignments would result in the loss of or temporary disturbance to Waters of the United States, including wetlands and other sensitive communities. This impact is significant. Implementation of the following mitigation measures, fully described in the 1997 DEIR/EIS, would reduce this impact to a less-than-significant level.

Mitigation Measure 7-4a: Avoid Impacts on Jurisdictional Waters of the United States, Including Wetlands, by Installing Protective Barriers and Implementing Best Management Practices.

Mitigation Measure 7-4b: Obtain and Comply with State and Federal Wetland Permits.

Mitigation Measure 7-4c: Compensate for Unavoidable Impacts on Jurisdictional Waters of the United States.

Impact: Potential Loss of Special-Status Plant Populations. Freshwater plant communities are limited in extent along the alignments and are found primarily in irrigation ditches and seasonal ponds. Although the majority of this habitat within the project area is disturbed, a few special-status plant species, including Sanford's arrowhead, legenere, and four-angled spikerush, are known to occur in the project vicinity. Temporary disturbance to or permanent loss of this habitat could affect populations of these species. Focused surveys for rare plants should be conducted during the blooming season to determine presence or absence of these species in the study area. This impact is significant. Implementation of the following mitigation measures, fully described in the 1997 DEIR/EIS, would reduce this impact to a less-than-significant level.

Mitigation Measure 7-5a: Conduct Preconstruction Surveys in Areas Not Previously Inventoried.

Mitigation Measure 7-5b: Avoid Known Special-Status Plant Populations during Project Design.

Mitigation Measure 7-5c: Compensate for Impacts on Special-Status Plant Populations.

Impact: Loss of or Disturbance to Individually Protected Trees within the City and County of Sacramento. Construction of the pipelines from the intake facilities to the FSC could result in damage to street trees along City and County streets and roadways. A number of trees that could potentially be affected occur along the alignments, particularly the pipelines for Alternatives 4 and 5. This impact is considered significant. Implementation of Mitigation Measure 7-6, fully described in the 1997 DEIR/EIS, would reduce this impact to a less-than-significant level.

Mitigation Measure 7-6: Obtain and Comply with City and County Tree Removal Permits and Implement Conditions of Permits.

Alternative 7: Freeport South Delivery

Generally, impacts of this alternative are very similar to those described for Alternatives 4, 5, and 6 above. Specific information relevant to this alternative is provided below. Potential mitigation measures to address all project impacts are identical to those described above for Alternatives 4, 5, and 6.

Vernal pools are potentially present along the pipeline alignment for this alternative on privately owned agricultural land, along the I-5 corridor, and adjacent to Thornton Road. Construction could potentially affect special-status plant species within these areas.

Freshwater marsh habitats occur adjacent to I-5 in the Stone Lakes area, on some privately owned land, and along Thornton Road near the Mokelumne River crossing. Potential for special-status plant species in this area is low along the roadside. However, additional detailed

surveys of the area during appropriate bloom periods would be necessary to assess special-status plant habitat and occurrence.

Construction of Alternative 7 along Thornton Road, near the riparian crossing of the Mokelumne River, could affect the river and associated riparian woodland habitat along the river banks. No significant change in the lower Mokelumne River level is expected within the willow oak riparian scrub, riparian woodland, or interior live oak remnants.

A small stand of valley oak woodland borders the east side of I-5 along the pipeline alignment. Construction could result in degradation of a portion of this habitat and loss of individual locally protected trees.

Alternative 8: Bixler Delivery

Generally, impacts of this alternative are very similar to those described for Alternatives 4, 5, and 6 above. Specific information relevant to Alternative 8 is provided below. Potential mitigation measures to address all project impacts are identical to those described above for Alternatives 4, 5, and 6.

Disturbance of salt marsh habitat in the vicinity of the brine disposal pipeline site could potentially affect rare plant species associated with this habitat, including Suisun marsh aster, Delta tule pea, and Mason's lilaeopsis.

Brackish marsh habitat exists within the Bixler area. Although the pipeline alignment does not cross into this marsh habitat, construction activities could affect brackish marsh habitat, including areas potentially subject to Corps jurisdiction adjacent to the alignment.